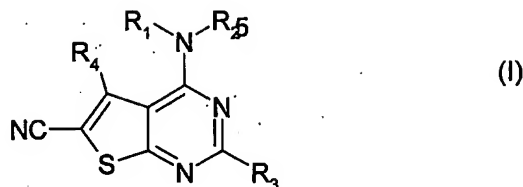


CLAIMS:

1) A compound of formula (I):



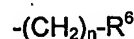
10

or a pharmaceutically acceptable salt thereof wherein

- R<sub>1</sub> and R<sub>2</sub> either

(a) independently represent :

- (i) a hydrogen atom
- 15 (ii) a group selected from an alkyl, alkenyl or alkynyl groups, which are optionally substituted by one or more substituents selected from halogen atoms and hydroxy, alkoxy, aryloxy, alkylthio, hydroxycarbonyl, alcoxycarbonyl, mono- or di-alkylaminoacyl, oxo, amino, mono- or di-alkylamino groups;
- 20 (iii) a group of formula



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wherein n is an integer from 0 to 4 and R<sup>6</sup> represents a cycloalkyl or cycloalkenyl group

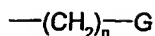
or

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- (b) R<sub>1</sub> and R<sub>2</sub> form, together with the nitrogen atom to which they are attached, a 3- to 8-membered ring comprising from 1 to 4 heteroatoms selected from nitrogen, oxygen and sulphur, which ring is saturated or unsaturated and optionally substituted by one or more substituents selected from halogen atoms and alkyl, hydroxy, alkoxy, acyl, hydroxycarbonyl, alcoxycarbonyl, alkylenedioxy, amino, mono- or di-alkylamino, mono- or di-alkylaminoacyl, nitro, cyano or trifluoromethyl groups;

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- R<sub>3</sub> is group of formula



wherein n is an integer from 0 to 4 and G represents a monocyclic or bicyclic aryl or heteroaryl group comprising from zero to four heteroatoms which group is optionally substituted by one or more substituents selected from:

- (i) halogen atoms;
- (ii) alkyl and alkylene groups, which are optionally substituted by one or more substituents selected from halogen atoms; and
- (iii) phenyl, hydroxy, hydroxyalkyl, alkoxy, alkylendioxy, aryloxy, alkylthio, amino, mono- or di-alkylamino, acylamino, nitro, acyl, hydroxycarbonyl, alkoxycarbonyl, cyano, difluoromethoxy or trifluoromethoxy groups;

- R<sub>4</sub> represents a hydrogen atom or an alkyl or aryl group

with the proviso that it is not 5-methyl-2-phenyl-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile

- 2) A compound according to claim 1 wherein R<sub>1</sub> and R<sub>2</sub> either:

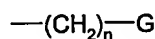
- a) independently represent hydrogen or groups selected from an alkyl, alkenyl or alkynyl groups having from 1 to 4 carbon atoms and being optionally substituted by one hydroxy group or cycloalkyl groups having from 3 to 6 carbon atoms;

or

- b) R<sub>1</sub> and R<sub>2</sub> form, together with the nitrogen atom to which they are attached, a 4- to 6-membered ring comprising from 1 to 2 heteroatoms selected from nitrogen, oxygen and sulphur, which ring is optionally substituted by one or two C<sub>1</sub>-C<sub>4</sub> alkyl groups which are themselves unsubstituted or substituted by one hydroxy group.

- 3) A compound according to any preceding claim wherein R<sub>1</sub> either:

- a) represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms  
or
- 5        b) forms together with R<sub>2</sub> and with the nitrogen atom to which they are attached, a 4- to 6-membered ring comprising from 1 to 2 heteroatoms selected from nitrogen and oxygen, which ring is optionally substituted by one or more substituents selected from halogen atoms and alkyl or acyl groups;
- 10    4) A compound according to any preceding claim wherein R<sub>2</sub> either:
- a) represents a group selected from an alkyl, alkenyl, alkynyl, cycloalkyl, hydroxyalkyl or di-alkylamino groups  
      or
- 15        b) forms together with R<sub>1</sub> and with the nitrogen atom to which they are attached, a 4- to 6-membered ring comprising from 1 to 2 heteroatoms selected from nitrogen and oxygen, which ring is optionally substituted by one or more substituents selected from halogen atoms and alkyl or acyl groups;
- 20    5) A compound according to any preceding claim wherein R<sub>3</sub> represents a group of formula



- 25        wherein n is an integer from 0 to 4 and G represents a monocyclic aryl or heteroaryl group comprising zero or one heteroatoms, which aryl or heteroaryl group is optionally substituted by one or more substituents selected from:
- (i)        halogen atoms;
- 30        (ii)        unsubstituted C<sub>1</sub>-C<sub>8</sub> alkyl, unsubstituted C<sub>1</sub>-C<sub>8</sub> alkoxy, unsubstituted C<sub>1</sub>-C<sub>3</sub> alkylenedioxy, nitro, trifluoromethyl and unsubstituted alkoxycarbonyl groups having a C<sub>1</sub>-C<sub>8</sub> alkyl portion;

- 6) A compound according to any preceding claim wherein  $R_4$  is hydrogen, an unsubstituted  $C_1$ - $C_8$  alkyl or unsubstituted  $C_5$ - $C_{14}$  aryl group.
- 7) A compound according to claim 6 wherein  $R_4$  represents an unsubstituted  $C_{1-4}$  alkyl group.
- 8) A compound according to any preceding claim wherein  $R_3$  represents a group selected from phenyl, pyridyl or benzyl groups which groups are optionally substituted by one or more substituents selected from:
- (i) halogen atoms;
  - (ii) unsubstituted  $C_1$ - $C_8$  alkyl, unsubstituted  $C_1$ - $C_8$  alkoxy, unsubstituted  $C_1$ - $C_3$  alkylenedioxy, nitro, trifluoromethyl and unsubstituted alkoxy carbonyl groups having a  $C_1$ - $C_8$  alkyl portion;
- 9) A compound according to claim 8 wherein  $R_3$  represents a phenyl or benzyl group substituted by one, two or three  $C_{1-6}$  alkoxy groups.
- 10) A compound according to claim 9 wherein  $R_1$  represents a hydrogen atom and  $R_2$  represents
- (iii) a group selected from an alkyl, alkenyl or alkynyl groups, which are optionally substituted by one or more substituents selected from halogen atoms and hydroxy, alkoxy, aryloxy, alkylthio, hydroxycarbonyl, alkoxy carbonyl, mono- or di-alkylaminoacyl, oxo, amino, mono- or di-alkylamino groups; or
  - (iv) a group of formula
- $$-(CH_2)_n-R^6$$
- wherein  $n$  is an integer from 0 to 4 and  $R^6$  represents a cycloalkyl or cycloalkenyl group
- 11) A compound according to claim 1 which is one of:

- 4-(4-Ethylpiperazin-1-yl)-5-methyl-2-phenylthieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(4-Ethylpiperazin-1-yl)-2-(4-methoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5 4-(Diethylamino)-5-methyl-2-phenylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-2-phenyl-4-piperidin-1-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 10 5-Methyl-2-(4-nitrophenyl)-4-piperidin-1-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(4-Methoxyphenyl)-5-methyl-4-piperidin-1-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-(4-methylpiperazin-1-yl)-2-(4-nitrophenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 15 5-Methyl-2-phenyl-4-piperazin-1-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(4-Methoxyphenyl)-5-methyl-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 20 4-(Diethylamino)-2-(4-methoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(4-Methoxyphenyl)-5-methyl-4-pyrrolidin-1-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 25 2-(4-Methoxyphenyl)-5-methyl-4-piperazin-1-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-2-(4-nitrophenyl)-4-piperazin-1-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 30 4-(Dibutylamino)-2-(4-methoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(4-Chlorophenyl)-5-methyl-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidine-6-carbonitrile

- 2-(3,4-Dimethoxyphenyl)-5-methyl-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5 4-[Ethyl(methyl)amino]-2-(4-methoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Diethylamino)-5-methyl-2-(4-nitrophenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 10 2-(4-Chlorophenyl)-4-(diethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Diethylamino)-2-(3,4-dimethoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 15 4-(Dimethylamino)-2-(4-methoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(4-Methoxyphenyl)-5-methyl-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(4-Chlorophenyl)-5-methyl-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 20 2-(4-Methoxyphenyl)-5-methyl-4-[methyl(prop-2-ynyl)amino]thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[(2-Hydroxyethyl)(methyl)amino]-2-(4-methoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 25 2-(3,4-Dimethoxyphenyl)-4-[ethyl(methyl)amino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-2-(4-methylphenyl)-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 30 4-(Diethylamino)-5-methyl-2-[4-(trifluoromethyl)phenyl]thieno[2,3-d]pyrimidine-6-carbonitrile

- 4-[Allyl(methyl)amino]-2-(4-methoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5 2-(3,4-Dimethoxyphenyl)-4-[(2-hydroxyethyl)(methyl)amino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,4-Dimethoxyphenyl)-5-methyl-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 10 5-Methyl-2-(4-methylphenyl)-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-(4-methylpiperazin-1-yl)-2-[4-(trifluoromethyl)phenyl]thieno[2,3-d]pyrimidine-6-carbonitrile
- 15 2-(1,3-Benzodioxol-5-yl)-5-methyl-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Diethylamino)-5-methyl-2-(4-methylphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 20 2-(1,3-Benzodioxol-5-yl)-4-(diethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(1,3-Benzodioxol-5-yl)-5-methyl-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 25 4-[Ethyl(methyl)amino]-5-methyl-2-pyridin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[Ethyl(methyl)amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 30 2-Benzyl-5-methyl-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-morpholin-4-yl-2-pyridin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile

- 4-[(2-Hydroxyethyl)(methyl)amino]-5-methyl-2-pyridin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5 2-(1,3-Benzodioxol-5-yl)-4-[(2-hydroxyethyl)(methyl)amino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[(2-Hydroxyethyl)(methyl)amino]-5-methyl-2-(4-methylphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 10 4-(Diethylamino)-5-methyl-2-pyridin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,4-Dimethoxyphenyl)-4-(dimethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 15 2-(3,4-Dimethoxyphenyl)-5-methyl-4-(propylamino)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Diethylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 20 2-Benzyl-4-(diethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-(4-methylpiperazin-1-yl)-2-phenylthieno[2,3-d]pyrimidine-6-carbonitrile
- 25 5-Methyl-4-morpholin-4-yl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[(2-Hydroxyethyl)methylamino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 30 2-(3,5-Dimethoxyphenyl)-5-methyl-4-(4-methylpiperazin-1-yl)-thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-Diethylamino-2-(3,5-dimethoxyphenyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 35



- 2-(3,5-Dimethoxyphenyl)-4-(ethylmethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 5 4-(6-Cyano-4-diethylamino-5-methylthieno[2,3-d]pyrimidin-2-yl)-benzoic acid methyl ester
- 4-[6-Cyano-4-(ethylmethylamino)-5-methylthieno[2,3-d]pyrimidin-2-yl]-benzoic acid methyl ester
- 10 2-Benzyl-5-methyl-4-morpholin-4-yl-thieno[2,3-d]pyrimidine-6-carbonitrile
- 2-Benzyl-4-[(2-hydroxyethyl)methylamino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 15 5-Methyl-4-(4-methylpiperazin-1-yl)-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- Methyl 4-(6-cyano-5-methyl-4-morpholin-4-ylthieno[2,3-d]pyrimidin-2-yl)benzoate
- 20 Methyl 4-[6-cyano-5-methyl-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidin-2-yl]benzoate
- Methyl 4-[6-cyano-4-(dimethylamino)-5-methylthieno[2,3-d]pyrimidin-2-yl] benzoate
- 25 Methyl 4-[6-cyano-4-[(2-hydroxyethyl)(methyl)amino]-5-methylthieno[2,3-d]pyrimidin-2-yl]benzoate
- 5-methyl-4-(methylamino)-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 30 4-(Dimethylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Ethylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
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5-Methyl-4-(propylamino)-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

5 4-(Butylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

4-(Isopropylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

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4-(sec-Butylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

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4-(Isobutylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

4-[(1-Ethylpropyl)amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

20

4-(tert-Butylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

4-(Cyclopropylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

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4-(Cyclobutylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

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4-(Cyclopentylamino)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

4-[Allyl(methyl)amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile

- 5-Methyl-4-[methyl(prop-2-ynyl)amino]-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5 4-[(2-Hydroxyethyl)amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[(2-Methoxyethyl)amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 10 4-[[2-(Dimethylamino)ethyl]amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno [2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-(3-methylpiperazin-1-yl)-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 15 4-(3,5-Dimethylpiperazin-1-yl)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(4-Acetylpiperazin-1-yl)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 20 4-[(2-Aminoethyl)(methyl)amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 25 N-[6-Cyano-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidin-4-yl]-beta-alanine
- 5-Methyl-4-(1H-pyrazol-1-yl)-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 30 4-(1H-Imidazol-1-yl)-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-(2H-1,2,3-triazol-2-yl)-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 35

- 5-Methyl-4-(1H-1,2,4-triazol-1-yl)-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5 2-(3,4-Dimethoxybenzyl)-5-methyl-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,4-Dimethoxybenzyl)-5-methyl-4-(4-methylpiperazin-1-yl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 10 2-(3,4-Dimethoxybenzyl)-5-methyl-4-(methylamino)thieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,4-Dimethoxybenzyl)-4-(ethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 15 2-(3,4-Dimethoxybenzyl)-5-methyl-4-(propylamino)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Cyclopropylamino)-2-(3,4-dimethoxybenzyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 20 4-(Cyclobutylamino)-2-(3,4-dimethoxybenzyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 25 2-(3,4-Dimethoxybenzyl)-4-(dimethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,4-Dimethoxybenzyl)-4-[ethyl(methyl)amino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 30 4-(Diethylamino)-2-(3,4-dimethoxybenzyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[Allyl(methyl)amino]-2-(3,4-dimethoxybenzyl)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
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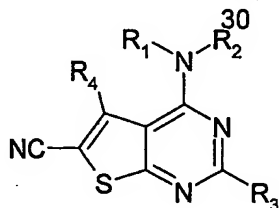
- 2-(3,4-Dimethoxybenzyl)-5-methyl-4-[methyl(prop-2-ynyl)amino]thieno[2,3-d]pyrimidine-6-carbonitrile
- 5 2-(3,4-Dimethoxybenzyl)-4-[(2-hydroxyethyl)amino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,4-Dimethoxybenzyl)-4-[(2-hydroxyethyl)(methyl)amino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 10 2-(3,4-Dimethoxybenzyl)-4-[(2-methoxyethyl)amino]-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 15 4-[[2-(Dimethylamino)ethyl](methyl)amino]-5-methyl-2-(3,4,5-trimethoxyphenyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-morpholin-4-yl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 20 5-Methyl-4-(4-methylpiperazin-1-yl)-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-(methylamino)-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 25 4-(Ethylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 30 5-Methyl-4-(propylamino)-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Isopropylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile

- 4-(sec-Butylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5 4-[(1-Ethylpropyl)amino]-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(tert-Butylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 10 4-(Cyclopropylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Cyclobutylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 15 4-(Dimethylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[Ethyl(methyl)amino]-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 20 4-(Diethylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 25 4-[Allyl(methyl)amino]-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-[methyl(prop-2-ynyl)amino]-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 30 4-[(2-Hydroxyethyl)amino]-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-[(2-Methoxyethyl)amino]-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 35

- 4-[(2-Hydroxyethyl)(methyl)amino]-5-methyl-2-(3,4,5-trimethoxybenzyl) thieno[2,3-d]pyrimidine-6-carbonitrile
- 5 5-methyl-4-(4-methylpiperazin-1-yl)-2-(2-phenylethyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Cyclobutylamino)-5-methyl-2-(2-phenylethyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 10 4-(Diethylamino)-5-methyl-2-(2-phenylethyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 5-Methyl-4-(4-methylpiperazin-1-yl)-2-(3-phenylpropyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 15 4-(Diethylamino)-5-methyl-2-(3-phenylpropyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,5-Dimethoxy-phenyl)-4-[(2-hydroxy-ethyl)-methyl-amino]-5-methyl-thieno[2,3-d]pyrimidine-6-carbonitrile
- 20 2-(3,5-Dimethoxy-phenyl)-5-methyl-4-morpholin-4-ylthieno[2,3-d]pyrimidine-6-carbonitrile
- 2-(3,5-Dimethoxyphenyl)-4-(ethylamino)-5-methylthieno[2,3-d]pyrimidine-6-carbonitrile
- 4-(Isobutylamino)-5-methyl-2-(3,4,5-trimethoxybenzyl)thieno[2,3-d]pyrimidine-6-carbonitrile
- 25 carbonitrile

and pharmaceutically acceptable salts thereof.

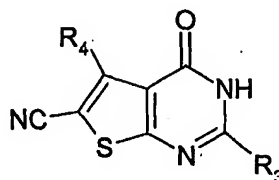
12) A process for the preparation of a compound of formula:



(I):

wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are as defined in any one of the preceding claims which process comprises:

(a) reacting the thienopyrimidinone of formula (VI)



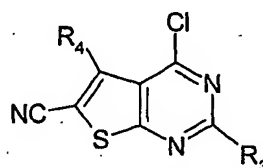
(VI)

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with a chlorinating agent

(b) removing after cooling the excess of chlorinating agent

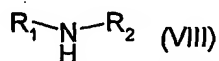
(c) optionally isolating the chlorothienopyrimidine of formula (VII)



(VII)

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(d) reacting the chlorothienopyrimidine of formula (VII) with an amine (VIII)



(VIII)

wherein  $R_1$  and  $R_2$  are as defined in any one of the preceding claims in a closed atmosphere at temperatures ranging from 40°C to 120°C.

13) A compound according to any one of claims 1 to 11 for use in the treatment of a pathological condition or disease susceptible to amelioration by inhibition of PDE7.

15

14) A pharmaceutical composition comprising a compound according to any one of claims 1 to 11 mixed with a pharmaceutically acceptable diluent or carrier.

15) Use of a compound according to any one of claims 1 to 11, in the manufacture of a medicament for the treatment of a pathological condition or disease susceptible to amelioration by inhibition of PDE7.

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- 16) Use according to claim 15, wherein the medicament is for use in the treatment or prevention of T cell mediated immune diseases and diseases of the airways.
- 5 17) Use according to claim 15, wherein the medicament is for use in the treatment or prevention of a disorder which is asthma, atopic dermatitis, chronic obstructive pulmonary disease, Crohn's disease, type I and type II diabetes, lymphoid leukemia and other forms of cancer, multiple sclerosis, allograft rejection after organ transplantation, psoriasis, rheumatoid arthritis and ulcerative colitis.
- 10 18) A method for treating a subject afflicted with a pathological condition or disease susceptible to amelioration by inhibition of PDE7, which method comprises administering to the said subject an effective amount of a compound according to any of claims 1 to 11.
- 15 19) A method according to claim 18, wherein the pathological condition or disease is asthma, atopic dermatitis, chronic obstructive pulmonary disease, Crohn's disease, type I and type II diabetes, lymphoid leukemia and other forms of cancer, multiple sclerosis, allograft rejection after organ transplantation, psoriasis, rheumatoid arthritis and ulcerative colitis.
- 20 20) A combination product comprising:
- 25 a) a compound according to any one of claims 1 to 11; and  
b) another compound selected from (a) PDE4 inhibitors, (b) A<sub>2A</sub> adenosine receptor antagonists, (c) NSAIDs, (d) COX-2 inhibitors, (e) TNF- $\alpha$  inhibitors and (f) steroids.  
for simultaneous, separate or sequential use.